It's About Time: Temporal Structuring in Organizations

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Abstract

In this paper we propose the notion of temporal structuring as a way of understanding and studying time as an enacted phenomenon within organizations. We suggest that through their everyday action, actors produce and reproduce a variety of temporal structures which in turn shape the temporal rhythm and form of their ongoing practices. A focus on temporal structuring, combined with a practice perspective, allows us to bridge the subjective-objective dichotomy that underlies much of the existing research on time in organizations. After developing the notion of temporal structuring, we illustrate its use in the context of a prior empirical study. We conclude by outlining some implications of temporal structuring for organizational research on time.

(Time; Temporal Structures; Structuring; Practice)

Management in organizations has long had an obsession with time, strikingly embodied, for example, by Frederick Taylor's time and motion studies at the turn of the century. *Faster* has long been a corollary to *cheaper*, especially in industries specializing in mass production or high-volume service. During the last two decades, expanding global competition, exponential increases in the speed of computers and telecommunications, and raised expectations for the availability and immediacy of products and services have played into a resurgence of interest in time and timing. Reflecting in part this resurgence in managerial interest, time has also recently emerged as a focus of attention in organizational studies (Albert 1995; Ancona et al. 2001a, 2001b; Bluedorn and Denhardt 1988; Butler 1995; Gersick 1994; Sahay 1997; Whipp 1994). In addition, views of time from social theory, sociology, anthropology, psychology, and rhetoric are having an influence on the organizational literature (e.g.,

Adam 1995, Bazerman 1994, Bergmann 1992, Elchardus 1988, Glucksmann 1998, Holmer-Nadesan 1997, Levine 1997, McGrath 1990, Nowotny 1992, Sullivan 1997).

A key characteristic of this literature is a difference in how time is understood—whether as an objective or subjective phenomenon. The two sides have posited opposing views of time as either existing independently of human action or as socially constructed through human action. Although researchers often tacitly assume one or the other view, a few researchers studying time, both within organizations (e.g., Clark 1990, Hassard 1996) and in society more broadly (e.g., Adam 1995, Bergmann 1992), have addressed the different views explicitly. We contribute to this discussion within organizational research by offering an alternative third view—that time is experienced in organizational life through a process of temporal structuring that characterizes people's everyday engagement in the world. As part of this engagement, people produce and reproduce what can be seen to be temporal structures to guide, orient, and coordinate their ongoing activities. Temporal structures here are understood as both shaping and being shaped by ongoing human action, and thus as neither independent of human action (because shaped in action), nor fully determined by human action (because shaping that action). Such a view allows us to bridge the gap between objective and subjective understandings of time by recognizing the active role of people in shaping the temporal contours of their lives, while also acknowledging the way in which people's actions are shaped by structural conditions outside their immediate control.

Our view of time in organizations is informed by practice research and insights about structures and structuring. Recently there has been great interest in what has been termed the "practice turn" (Schatzki et al. 2001), where

researchers explore the embodied, embedded, and material aspects of human agency in constituting particular social orders (Hutchins 1995, Lave 1988, Suchman 1987). In this paper we explicitly integrate the notion of social practices from this literature with that of enacted structures drawn from the theory of structuration (Giddens 1984), arguing that the combination can be valuable for the study of organizations in general and of time in organizations in particular. With respect to the latter, we have obtained important insights into how temporality is both produced in situated practices and reproduced through the influence of institutionalized norms. This integration suggests that time is instantiated in organizational life through a process of *temporal structuring*,[1] where people (re)produce (and occasionally change) temporal structures to orient their ongoing activities. Weekly meeting schedules, project deadlines, academic calendars, financial reporting periods, tenure clocks, and seasonal harvests have typically been understood as either objective indicators of an external phenomenon, or as the social products of collective sensemaking. Our view, in contrast, understands these as temporal structures which (like social structures in general) "specify parameters of acceptable conduct, but [. . .] are also modified by the actions they inform" (Barley 1986, p. 80). Whether expressed in terms of clocks or events, these temporal structures are created and used by people to give rhythm and form to their everyday work practices. In doing so, people establish and reinforce (implicitly or explicitly) those temporal structures as legitimate and useful organizing structures for their community. In turn, such legitimized temporal structures—while always potentially changeable because they are constituted in action—become taken for granted, serving as powerful templates for the timing and rhythm of members' social action within the community. Thus temporal structures, like all social structures (Giddens 1984), are both the medium and the outcome of people's recurrent practices.

Our purpose in this paper is to develop the basic outlines of an alternative perspective on time in organizations that is centered on people's recurrent practices that shape (and are shaped by) a set of temporal structures. We see this emphasis on human practices (as distinct from external force or subjective construction) as bridging the current opposition between objective and subjective conceptualizations of time, and thus as making possible a new understanding of the temporal conditions and consequences of organizational life. By grounding our perspective in the dynamic capacities of human agency we believe we gain unique insights into the creation, use, and influence of time in organizations.

In the following section we discuss some of the different assumptions that researchers have made about time and timing in social life, and which may be expressed in terms of a fundamental objective-subjective temporal dichotomy. We next develop the notion of temporal structuring and use it to suggest that a practice-based perspective on time can bridge the gap between the two sides of this fundamental dichotomy and also enable us to move beyond some additional temporal oppositions evident in the literature. We then explore temporal structuring in the context of a prior empirical study to illustrate the value and insights generated by applying a practice-based perspective on time in organizations. We conclude by discussing some implications of this alternative temporal lens for organizational research.

Objective and Subjective Perspectives on Time

A fundamental dichotomy underlying much of the social sciences in general, including perspectives on time, is that between *objective* and *subjective* realities (Jaques 1982, Kern 1983, Blyton et al. 1989, Adam 1994). According to the objective view, time is "independent of man" (Clark 1990, p. 142), a view that is aligned with a Newtonian assumption of time as abstract, absolute, unitary, invariant, linear, mechanical, and quantitative. The clock has emerged as a primary metaphor in this conceptualization of time. Most quantitative social science studies of organizations, whether synchronic or diachronic, adopt this perspective and treat time as "quantitative time—continuous, homogeneous, and therefore measurable because equal parts are equivalent" (Starkey 1989, p. 42). The opposing view conceptualizes time as subjective, a product of the norms, beliefs, and customs of individuals and groups. Such a view reflects a constructed conceptualization of time, where time is "defined by organizational members" (Clark 1985, p. 36) and is assumed to be neither fixed nor invariant. Time here is seen as relative, contextual, organic, and socially constructed (Adam 1990, Glucksmann 1998, Jurczyk 1998).

This objective-subjective dichotomy is often presented in terms of the contrast between *clock* time and *event* time. Jaques (1982, p. 10) notes that the clock notion of time is consistent with an atomic or mechanical view of the world. Clock time has been associated with an emphasis on time commodification, work discipline, and "machine time" in industrial organizations (Adam 1994, 1995; Hassard 1989; Thompson 1967; Zerubavel 1981). Event time, in contrast, is conceived as "qualitative time—heterogeneous, discontinuous, and unequivalent when different time periods are compared" (Starkey

1989, p. 42). In this view, "[t]ime is *in* the events, and events are defined by organizational members" (Clark 1985, p. 36). The pattern of events, whether social (e.g., rites of passage), biographical (e.g., careers), biological (e.g., puberty), or natural (e.g., seasons), is neither fixed nor regular, but is more dynamic, varying by conventions and norms.

The distinction between *chronos* and *kairos* made in the rhetorical literature reflects the same underlying objective-subjective dichotomy. Since classical times, rhetoricians have recognized these two different Greek terms for time (Kinneavy 1986, Miller 1992, Bazerman 1994). *Chronos* is "the chronological, serial time of succession. . .time measured by the chronometer not by purpose" (Jaques 1982, pp. 14–15); it is typically used to measure the timing or duration of some action. In contrast, *kairos,* named after the Greek god of opportunity, refers to "the human and living time of intentions and goals. . .the time not of measurement but of human activity, of opportunity" (Jaques 1982, pp. 14–15). While rhetoricians have always seen *chronos* as objective and quantitative, they have long debated the status of kairotic time. Some believe it is given and independent of the actor, that is, "a *kairos* presents itself at a distinct point in time, manifesting its own requirements and making demands on the rhetor" (Miller 1992, p. 312). Increasingly, however, rhetoricians have suggested that *kairos* is shaped by the actor, that is, "any moment in time has a *kairos,* a unique potential that a rhetor can grasp and make something of" (Miller, 1992, p.312).[2]

Much of the social scientific literature on time may be seen in light of the fundamental objective-subjective temporal dichotomy presented above,[3] and also captured by the contrast between clock-based and event-based, and between chronological and kairotic, time. While adopting one side or the other of this dichotomy may offer researchers analytic advantages in their temporal studies of organizations, difficulties arise when these positions are treated—not as conceptual tools—but as inherent properties of time. Focusing on one side or the other misses seeing how temporal structures emerge from and are embedded in the varied and ongoing social practices of people in different communities and historical periods, and at the same time how such temporal structures powerfully shape those practices in turn. By focusing on what organizational members actually do, our practice-based perspective on temporal structuring may offer new insights into how people construct and reconstruct the temporal conditions that shape their lives.

Temporal Structuring in Organizations: A Practice Perspective

In this section we develop the notion of temporal structuring, and explore how a practice-based perspective may be able to bridge the gap between the objective and subjective perspectives highlighted above, as well as between other dichotomies in the literature on time.

Temporal Structuring in Practice

Our practice-based perspective on time suggests that people in organizations experience time through the shared *temporal structures* they enact recurrently in their everyday practices. That is, when taking action in the world, people routinely draw on common temporal structures that they (and others) have previously enacted to organize their ongoing practices, for example, using a project schedule to pace work activities, and the seasons to inform vacation activities. Whether implicitly or explicitly, people make sense of, regulate, coordinate, and account for their activities through the temporal structures they recurrently enact.

Like social structures in general (Giddens 1984), temporal structures simultaneously constrain and enable. For example, by following office schedules or academic calendars we restrict our activity to certain times or days, and by viewing our careers in terms of particular milestones we reinforce a certain evaluation of our activities that precludes other interpretations. Furthermore, different temporal structures constrain and enable different actions. For example, the common use of a quarterly financial cycle enables a company's sales activities to be distributed across four quarters of the year, but the urgency of achieving quarterly targets may also constrain the development of longer-term relationships with buyers.

The repeated use of certain temporal structures reproduces and reinforces their legitimacy and influence in organizational life. Because such temporal structures are often routinely and unproblematically drawn on, they tend to become taken for granted. As such, they appear to be given, invariant, and independent, creating the impression that time exists externally. This apparent objectivity, however, is in fact objectification, constituted by the actors who reify the temporal structures they enact in their recurrent social practices. Through such a structuring process, temporal structures can be used to powerfully shape people's ongoing activities. Structuring becomes particularly influential when certain temporal structures become so closely associated with particular social practices (e.g., teaching occurs in semester-long blocks) that actors have little awareness of them as socially constituted, or of the possibility of enacting different temporal structures by changing social practices. As Barley (1988, p. 125) notes:

> One of the most potent techniques we humans have for turning culturally arbitrary behavior into social fact consists of our ten-

dency to treat even self-imposed temporal boundaries as inviolable external constraints.

In the industrialized world, for example, the summer season is typically associated with vacation activities, and work rhythms reflect this temporal structure. This latter example creates some temporal discontinuities, however, because in the Northern Hemisphere summer occurs between June and August, and in the Southern Hemisphere between December and February, a lack of seasonal alignment that frequently creates coordination problems for global firms. Such firms see a *calendar-based* global period for vacation activities as making economic sense, but the longstanding and habitual structuring of vacation activities to a certain *seasonal* temporal structure is, because of its institutionalization, particularly difficult to change.

Individuals typically draw on (and thus shape and are shaped by) multiple temporal structures in their actions. For example, while the practices of many sales forces are strongly tied to their company's quarterly financial cycle, they are also tied to the seasonal buying patterns of their customers. Similarly, people often structure meetings by reference to both calendar time for routine activities (e.g., weekly meetings) and events for exceptions (e.g., meetings related to a technology breakdown). People also live with the implications of social and biological time. For example, employees must deal with corporate schedules as well as such personal temporal events as childbirth, chronic disease, aging parents, and retirement. People may enact different temporal structures because of their membership in multiple communities. For example, active American members of the Baha'i and Jewish communities participate in two calendrical structures—one religious and one secular. In addition to observing the holidays and practices of their religious calendar, they use the secular calendar as the basis for their children's schooling timetables and their employment schedules.

In contrast to the singular, homogenized view of clock time prevalent in the sciences (Adam 1994, Clark 1990), scholars have begun to recognize the importance of what Nowotny (1992, p. 424) has termed *pluritemporalism*—"the existence of a plurality of different modes of social time(s) which may exist side by side." Our structuring lens sees this not so much as the existence of multiple times, but as the ongoing constitution of multiple temporal structures in people's everyday practices. Engagement in such temporal multiplicity has important consequences for people's experiences of time. That is, by enacting multiple and often interdependent temporal structures, actors engage with alternative, interacting, or

contradictory expectations about how to temporally structure their activities. For example, many workers in the industrialized world report significant stress associated with trying to balance the different temporal expectations arising from often incompatible corporate and family temporal structures (Bailyn 1993, Perlow 1997). Enacting multiple different temporal structures in their ongoing practices affords individuals the opportunity to experience a variety of different temporal rhythms. Through such engagement they may experience the tension created by temporal conflict, but they also may realize the possibilities of alternative temporal orders, and may act to change their practices, and thus their temporal structures.

Change in Temporal Structures

Temporal structures, because they are constituted in ongoing practices, can also be changed through such practices. Like all social structures, they are ongoing human accomplishments, and thus provisional. They are always only "stabilized-for-now" (Schryer 1993).[4] During periods of stability, they may be treated, for practical and research purposes, as objective. But because they are only stabilized for now, actors can and do modify their community's temporal structures over time, whether explicitly or implicitly. Zerubavel (1981), for example, describes a number of groups that intentionally instituted calendrical changes, whether for religious reasons (when the early Christians wanted to dissociate themselves from the Jewish community from which they emerged), or political purposes (when the architects of the French revolution sought to symbolize the transformation of their society through adoption of a decimal calendar). Of course, such deliberate attempts at change initiated by a single person or small group are only successful when members of the broader community accept and enact the newly mandated structures. Thus, the Christians succeeded in adopting a calendar that was distinct from the Jewish one, while the tenuous authority of the French revolutionaries was insufficient to sustain their introduction of a decimal calendar.

Explicit modifications to temporal structures are not solely associated with religious and revolutionary activity. Often such modifications are associated with innovations intended to improve industrial, organizational, or societal effectiveness. For example, Bluedorn and Denhardt (1988, p. 314) describe the case of the Missouri tourism industry, which successfully lobbied the state legislature to alter the date on which public schools began classes so as to bring the vacation period of Missouri school children (and their families) into closer alignment with the industry's definition of the "summer vacation season." On the corporate

side, numerous businesses implement significant temporal changes by adopting just-in-time (JIT) inventory systems, shifting the temporal structure enacted by both suppliers and buyers from one based on suppliers' production and delivery schedules to one driven by buyers' demand cycles.

These examples highlight the inherent malleability of even well-established temporal structures. Highly institutionalized and widely recognized temporal structures, while always potentially changeable, are usually changed only as the result of explicit and considerable effort, investment, and groundwork. For example, the change in Missouri's school schedule was accomplished through a carefully orchestrated, well-funded, and highly planned initiative, while changes in the temporal structure governing companies' supply chains require significant design, coordination, and implementation.

Explicit changes in temporal structures may also occur in a less dramatic and choreographed way, particularly those structures that are less institutionalized within a community. Many temporal changes are accomplished as a regular part of everyday practices—as "the practical and intentional reconstruction of orderliness" (Dubinskas 1988a, p. 14), or what Bourdieu (1977, p. 6) refers to as the "strategic manipulation of time," which he argues is central to agents' maintenance of a particular social order. For instance, some companies routinely and explicitly switch between different temporal structures for accounting purposes, as in the case of Mt. Polaris, a mountain resort studied by Guild (1998), which openly keeps two sets of accounts: one to manage its different seasonal businesses (skiing in winter and golfing in summer) and one to provide annual financial reports to its parent company, which operates on a regular fiscal year. Similarly, in many parts of the world people routinely change their clocks to "daylight savings time."

Changes to temporal structures may also occur implicitly, through the lapses, workarounds, and adaptations that characterize day-to-day activity. In many cases, such adaptations result only in variations around a temporal structure, without fundamentally changing it. Nandhakumar and Jones (1999), for example, show how the time management of a project is improvisatory, with members juggling and weaving multiple and interdependent project activities rather than following a sequence of preplanned steps. In other cases, minor shifts in the same direction can accumulate to create fundamental changes in temporal structures. For example, workers often slip into working late or over weekends to meet some pending deadline or make up for time lost during the conventional hours of work, and if they continue in this practice beyond the immediate crisis, they may constitute a different temporal

structure in practice, even while still believing they are enacting the old structure.

Thus, changes to the temporal structures enacted by members of a community may be introduced explicitly or implicitly, and they may be accomplished with substantial planning and preparation or they may emerge more subtly and slowly from the everyday slippages and accommodations that arise in ongoing human action. In every case, the changes to a temporal structure must be accepted and adopted by other members of the community in order for the changed temporal structure to be legitimated and sustained. Underlying our focus on temporal structuring and change is a recognition of the inherent ability of people to "choose to do otherwise" (Giddens 1993). That is, people are purposive, knowledgeable, adaptive, and inventive actors who, while they are shaped by established temporal structures, can also choose (whether explicitly or implicitly) to (re)shape those temporal structures to accomplish their situated and dynamic ends.

The Practice Perspective in Comparison to Other Perspectives on Time

We believe that the notion of temporal structuring outlined here offers a powerful way of studying temporal influence in organizations. It suggests that studying time in organizations requires studying time in use, that is, examining what organizational members actually do in practice, and how in such doing they shape the temporal structures that shape them. Table 1 compares the dominant (objective and subjective) perspectives on time with the practice-based perspective developed here. In essence, these perspectives differ in where they position the primary locus of explanation for temporal phenomena. That is, an objectivist perspective places most emphasis on an *external entity* or force, a subjectivist perspective is chiefly concerned with *cultural meanings*, and a practice perspective focuses principally on *human activities.* In addition to these fundamental differences, we can also point to differences in people's experiences of time and the role of human actors in temporal change.

In the objective perspective, time is understood to exist independently of human actions, and is thus experienced as a powerful constraint on those actions. From such a perspective, time itself (because it is seen to be external) cannot be changed by any group or organization—however, people's responses to and assessments of it may change. Thus, we see initiatives in organizations to "speed up," "slow down," or to "balance" or "manage" time more effectively. Such temporal changes are then evaluated by examining performance variance along standardized temporal measures. Objective views of time are limited because they neglect the active role of people in

Table 1 Different Perspectives on Time in Organizations

	Objective	Subjective	Practice-Based
View of time	Exists independently of human action; exogenous, absolute.	Socially constructed by human action; culturally relative.	Constituted by, as well as constituting ongoing, human action.
Experience of time	Time determines or powerfully constrains people's actions through their use of standardized time-measurement systems such as clocks and calendars.	Time is experienced through the interpretive processes of people who create meaningful temporal notions such as events, cycles, routines, and rites of passage.	Time is realized through people's recurrent practices that (re)produce temporal structures (e.g., tenure clocks, project schedules) that are both the medium and outcome of those practices.
Role of actors in temporal change	Actors cannot change time; they can only adapt their actions to respond differently to its apparent inexorability and predictability, e.g., speeding up, slowing down, or reprioritizing their activities.	Actors can change their cultural interpretations of time, and thus their experiences of temporal notions such as events, cycles, and routines, e.g., designating a "snow day," "quiet time," "fast track," or "mommy track."	Actors are knowledgeable agents who reflexively monitor their action, and in doing so may, in certain conditions, enact (explicitly or implicitly) new or modified temporal structures in their practices, e.g., adopting a new fiscal year or "casual Fridays."

creating and shaping the temporal conditions of their lives. For example, an objective perspective on time cannot easily account for the findings of Roy's (1959) classic study of a machine shop. In this work, Roy showed how workers endured the routine monotony of their work days by socially reconstructing them in terms of various occasions for social interaction, such as "banana time," "window time," and "coke time."

In the subjective perspective, time is seen to be socially constructed and thus experienced through people's culturally relative interpretations, which make sense of temporal events, routines, and cycles. From such a perspective, temporal change is achieved as people change the cultural meanings and norms associated with particular organizational events, routines, and conventions. Thus, Roy's (1959) findings can easily be accounted for in a subjective perspective. However, what cannot be easily explained is the way in which people's actions are shaped by structural conditions outside their immediate control. For example, the work on entrainment (Ancona and Chong 1996), which shows how the daily rhythms of corporate life are strongly shaped by larger economic or institutional pressures such as the fiscal year or quarterly sales cycles cannot be adequately accommodated in this perspective on time, which tends to focus on the local creation and change of temporal constructions, not their objectification, reification, and institutionalization.

Our practice-based perspective on time views it as experienced through the temporal structures people enact in their recurrent practices. Because such a view sees temporal structures as both shaping people's action and being shaped by such action, it helps to bridge the opposition between objective and subjective views. This practice-based perspective recognizes that time may appear to be objective or external because people treat it as such in their ongoing action—objectifying and reifying the temporal structures they enact in their practices by treating clocks, schedules, milestones, etc., as if they were "out there" and independent of human action. Thus, our practice perspective on time would recognize that the seemingly external cycles such as the fiscal year or quarterly sales cycle identified by Ancona and Chong (1996) are created and objectified by ongoing individual and collective social practices. It would also recognize that even as Roy's (1959) workers constructed local social times, they were also objectifying the nine to five temporal structure of the work day in their machine shop and, more broadly, in society. Similarly, a practice-based perspective recognizes that time may appear to be subjective because people knowledgeably produce and occasionally change the temporal structures they enact in their practices—treating schedules and deadlines as provisional, relative, and alterable. Recognizing this duality allows us to see how in the process of temporal structuring, every human action constitutes, is constituted by, and can potentially reconstitute the temporal structures being enacted.

A practice-based perspective also helps us to see that

people may experience time as *clock-based* or *event-based* (or both) depending on the type of temporal structure being enacted in practice at that moment. That is, when taxpayers rush to meet the annual April 15th tax deadline, they are collectively enacting a clock-based temporal structure. When a snow removal service sends out equipment to plow the snow piling up on roads during each snowstorm, they are enacting an event-based temporal structure. When residents of Boston park their cars on certain streets, they collectively enact both clock-based (e.g., parking is prohibited on the first Tuesday of every month for street cleaning) and event-based (e.g., parking is prohibited during a snow emergency declared by the city) temporal structures. The designation of clock-based and event-based times as distinct often breaks down in practice. Because both are human accomplishments, people routinely blur the distinctions between the clock and events, organizing their activities in terms of both clock time *and* event time (rain dates being a simple example). Moreover, events can include those external to the community (e.g., snow storms), those designated by calendars (e.g., birthdays), those entrained to reified chronological rhythms (e.g., the fiscal year end), and those explicitly shaped by members of a community (e.g., a wedding day).

The related distinction between *chronos* and *kairos* also fades as we use the notion of temporal structure to see that people enact both chronologically based temporal structures and those shaped kairotically by the people's sense of an opportunity at hand (e.g., when a company schedules its marketing campaign or times its pricing adjustments based on perceptions of its competitors' weaknesses). People attempting to introduce or motivate change often explicitly manipulate people's sense of time to achieve this effect, shaping kairotic opportunities for change. For example, at the 1946 annual convention of the Young Women's Christian Association (YWCA), delegates were presented with a proposed—and, at the time, controversial—interracial charter on which they would ultimately vote. The keynote speaker, Dr. Benjamin Mays, president of Morehouse College, urged reluctant delegates to accept the proposed charter by emphasizing their ability to strategically shape time to their ends:[5]

> I hear you say that the time is not ripe. . . . but if the time is not ripe, then it should be your purpose to ripen the time.

Delegates responded to his call, and the interracial charter was adopted by the convention.

The Practice Perspective and Other Oppositions in the Literature

With its acceptance of the fundamental duality (constituting and being constituted by human action) of all social structures, the practice-based notion of temporal structuring enables us to bridge the longstanding opposition between objective and subjective views of time. It also allows us to address several other temporal oppositions that are evident in the social science literature. One such opposition is that between *universal* (global, standardized, acontextual) and *particular* (local, situated, context-specific) time. Zerubavel (1981) describes how temporal frameworks, such as calendars, have shifted from being particularistic and local (often associated with religious communities) to being universal and global (associated with the spread of trade, industrialization, and capitalism). As an example of this shift, Zerubavel cites the widespread adoption of the Gregorian calendar (1981, p. 100):

> Today, almost four hundred years after its inception, the Gregorian calendar is almost generally accepted throughout the world. It is the first calendar ever to have attained almost universal recognition and validity as the standard framework to be used for all time-reckoning and dating purposes.

Giddens (1990) argues that one of the dominant characteristics of modernity is the separation of time from space made possible by the standardization of time across the world. We see such human efforts to standardize temporal frameworks inscribed in official time zones and the 24-hour clock. Castells (1996, p. 434) similarly suggests that contemporary notions of time have been universalized in a "network society" where global capital markets work in "real time" and flexible management demands "just-in-time labor." In a recent example, the world's largest watchmaker, the Swatch Group, proposed abandoning even local time zones in favor of a single, "universal Internet time" that divides the day into 1,000 "Swatch beats" (Harmon 1999).

In spite of the general movement from *particular* towards *universal* notions of time (Castells 1996, Giddens 1990, Zerubavel 1981), we can see that in use, all universal temporal structures must be particularized to local contexts because they are enacted through the situated practices of specific community members in specific locations and time zones. Even the seemingly universal International Date Line is shaped and reshaped by local interests, as was evident in the recent preparations for the arrival of the year 2000. The tiny nation of Kirabati, consisting of many islands scattered over three time zones and spanning the International Date Line, declared itself to be in a single time zone—thus redrawing the International Date Line in order to be in the first group of nations to celebrate the new millennium. Temporal structures, while always enacted in particular contexts, may become universalistic to the extent

that multiple communities enact the same (or similar) temporal structure in their local practices.

The notion of temporal structuring also helps us bridge the apparent opposition of *linear* and *cyclic* time. Linear time is evident in many stage models (e.g., Kohlberg 1981, Rostow 1960, Lewin 1951), as well as in the progressive career ladders of corporate and academic hierarchies. Cyclic time is highlighted in Clark's (1985) empirical work in industries such as sugar beet processing, can making, and hosiery manufacturing. Here he finds cyclic variation in the production of goods and services, occasioned by recurrent events such as crop ripening, changes in market demand, and shifts from factory operation to shutdown. An emphasis on the cyclic temporality of organizational life also underpins the work on entrainment, developed in the natural sciences and gaining currency in organization studies. Defined as "the adjustment of the pace or cycle of one activity to match or synchronize with that of another" (Ancona and Chong 1996, p. 251), entrainment has been used to account for a variety of organizational phenomena displaying coordinated or synchronized temporal cycles (Ancona and Chong 1996, Clark 1990, Gersick 1994, McGrath 1990).

Viewed from a practice perspective, the distinction between cyclic and linear time blurs because it depends on the observer's point of view and moment of observation. In particular cases, simply shifting the observer's vantage point (e.g., from the corporate suite to the factory floor) or changing the period of observation (e.g., from a week to a year) may make either the cyclic or the linear aspect of ongoing practices more salient. Similarly, depending on the length of observation, a phenomenon may shift from being seen as a one-time event to being recognized as part of an ongoing cycle. For example, Tyre and Orlikowski (1994) found that the introduction of a new process technology afforded an initial, limited "window of opportunity" during which users were willing to make changes to their technologies and use habits before these habits congealed. When observed over a period of time, however, such "windows of opportunity" were seen to be cyclic, occasioned periodically by such events as a change in management or an infusion of new resources.

The social science literature on time in organizations also reflects a tension between *natural* time and *social* time. Adam (1995, p. 43) notes that social scientists have long concentrated on social time, while relegating natural time to the physical sciences. Nevertheless, at least two types of natural time—biological and ecological—are reflected in certain organizational research. Age as an aspect of biological time is reflected in such issues as performance and career expectations for workers at different ages (Lawrence 1984) and issues around the so-called

"mommy track" (Bailyn 1993). Another aspect of biological time is evident in studies of the problems faced by shift workers as their bodies react to natural rhythms such as the day/night cycle (see Adam 1995). Ecological time is reflected in the current focus on sustainability in business enterprises, environmentalism and eco-technologies, and the impact of industrial production on longer-term economic expansion and growth (Egri and Pinfield 1996, Senge and Carstedt 2001, Shrivastava 1995).

In focusing on *social* rather than *natural time*, we have often ignored their interdependence. In studying the role of age in organizational life, for example, Lawrence (1996) points out the complex ways in which socially constructed age norms for behaviors are intertwined with chronological age. In practice, individuals have a chronological age that influences but does not determine their abilities, interests, health, and so on. In their actions, people reinforce or undercut socially established norms for their perceived age. A similar example of the inseparability of natural and social time concerns environmental sustainability. Projections of *The Limits to Growth* (Meadows et al. 1972), based on rolling forward the effects of current and past human actions on the natural environment (e.g., burning of irreplaceable fossil fuels) were, of necessity, inaccurate, since they could not anticipate all future changes in human social behavior and the development of new technological innovations. However, social time may not ignore natural time in practice, at the peril of suffering from natural disasters that might have been avoided.

Finally, in his ethnographic study of genetic engineering firms, Dubinskas (1988b) highlights the opposition between what he calls *closed* and *open-ended* temporal orientations. Studying different subcultures within such firms, he found that scientists tended to adopt an open-ended temporal orientation appropriate to their image of scientific work as "drawn continually forward by the questions posed to it by nature, . . .[so that] there is no fixed end in view" (p. 196), while managers, in contrast, adopted a short-term, closed temporal orientation which focused on "the immediate present and the proximate future," in line with their sensitivities to the market (p. 195).

In practice, however, an *open-ended* or *closed* temporal orientation is not a stable property of occupational groups, but an emergent property of the temporal structures being enacted at a given moment by the groups' members. Thus, individuals and groups are not restricted to *either* closed *or* open-ended temporal structures—Rather, they can and do enact *both* types of temporal structures depending on the activity or pressures at hand. Because these structures are enacted, they may be reconstituted from closed to open and vice versa. Moreover, point of view and moment of

observation may also affect the type of structuring observed. Project deadlines may initially appear to be so far away that most project members enact open-ended temporal structures. At some point—for example, Gersick's (1988, 1989) midpoint—project members may suddenly perceive the deadline as real and binding and shift to enacting a closed temporal structure.

In all these cases, the notion of temporal structuring through ongoing practices helps us understand and bridge the temporal oppositions underlying the research literature. We turn now to an empirical example to demonstrate how this perspective can offer a new understanding of the temporal conditions and consequences of organizational life.

Temporal Structuring in Practice: An Empirical Illustration

We illustrate the notion of temporal structuring by drawing on an earlier study which examined one community's use of electronic media to conduct a complex project.[6] Examining this community's ongoing work practices through the lens of temporal structuring provides a richer understanding of how, when, and why members of the community structured their activities over time, and with what consequences.

The Common LISP Experience

Our example centers on the electronic communication of a geographically and organizationally dispersed group of artificial intelligence language designers in the early 1980s. These designers were pressured by the Department of Defense to define a common dialect of the LISP computer language from the various incompatible LISP dialects then in use. Although participants considered the Common LISP project critical to future funding, it was not itself directly funded, nor did it have a specific deadline, though it ultimately lasted about two and a half years. The composition of the group was loosely defined, with roughly 100 individuals participating at various points, and with 17 active members. Members did most of their work on Common LISP remotely (via an e-mail distribution list) and part time (that is, in addition to their regular job responsibilities). The work of this loosely linked group, which considered itself democratic and nonhierarchical, was coordinated by one well-respected individual who volunteered to oversee the production of the Common LISP manual that would be the group's ultimate output. Because the individuals involved had not previously existed as a task-oriented group, they initially shared few groupwide temporal structures beyond those widely shared by members of the artificial intelligence

community in the United States. Each member of the group belonged to a different organization (university or corporation) with its own implicit and explicit temporal structures. During the course of the project, group members initiated several temporal structures, which the rest of the group then adopted and enacted as community-wide temporal structures. Initially, such community temporal structures were more open-ended and event-based, but later more closed and deadline-oriented structures were added as well.

The coordinator got the project rolling by issuing his organization's LISP manual as the first draft of the Common LISP manual. When other group members responded by initiating open-ended discussions of the draft, they collectively shaped an emergent temporal structure. From this point to one relatively late in the project, the group structured its work around a series of open-ended project phases, each initiated by the coordinator's issuance of a new manual draft (six were issued in all), generally paced by his sense of readiness (*kairos*) rather than by specific dates (*chronos*). The group treated each draft release as an event initiating discussion of perceived gaps or problems and further proposals and agreements, which in turn led to the next draft. Within this temporal structure that shaped project activities over most of the two and a half years, group members also enacted more micro temporal structures, including specifically their daily rhythm of participation in the project. An analysis of the date and time stamp of the messages reveals a shared, albeit implicit, daily pattern of when messages were sent. Over the entire project, more than 60% of all Common LISP messages were sent outside of the 9 am to 5 pm time frame, reflecting the fact that most participants were participating in this project in addition to their "day" jobs. Almost a third of the messages on any day were sent between 7 and 11 pm (or 19:00–23:00 on the 24-hour clock). While messages were sent at all times, the period of lowest activity was from 1 to 7 am, suggesting biological sleep rhythms.

Over the course of the project, the primary temporal structure around drafts was adjusted and supplemented to meet the group's perceived needs, sometimes implicitly and sometimes explicitly. Relatively early in the project, for example, participants began debating the use of the symbol "NIL" in the LISP language, a "religious issue" for many of them. After an intense debate lasting a month and a half, one faction of key players finally agreed to compromise their position. This compromise was followed by a drop-off in communicative activity on the e-mail distribution list for over a month, then a gradual resumption of activity that picked up in pace only with the issuance of another version of the manual. When

asked later about this hiatus, one key member noted that "decompression from [the NIL] debate was the essential cause." The Common LISP members seem to have implicitly adjusted their temporal structure around this "NIL incident," collectively pausing to recover from a contentious episode. Ultimately, however, this adjustment did not change the draft-based temporal structure, but was simply a fluctuation in it.

In contrast to such implicit temporal structuring, the Common LISP members also explicitly adjusted their draft-based temporal structure to take advantage of a recurring temporal structure enacted by the broader community of artificial intelligence researchers—the annual meetings of the American Association for Artificial Intelligence (AAAI). The second of the two face-to-face Common LISP meetings that took place during the project was organized around a previously scheduled AAAI conference that brought many Common LISP participants together in a single location. Although the conference was not tied to particular task needs of the Common LISP project, the group saw it as an opportunity to meet face to face. At the same time, however, the AAAI conference constrained the timing for the meeting, leading the coordinator to rush in order to issue a manual draft in time for members to read it before the face-to-face meeting. In this case, the coordinator and other members explicitly adjusted the open-ended and event-based temporal structure built around the manual drafts to coordinate with the clock-based temporal structure of their annual professional meetings. Subsequently, they resumed and reinforced their more open-ended, draft-based temporal structure.

Another case of explicit temporal structuring, this time resulting not in a minor variation of the existing structure but in the adoption of a new temporal structure to supplement the existing one, was initiated by the coordinator's introduction of electronic balloting. The primary temporal structure around successive manual drafts often led to extended electronic discussions of particular issues without resolution. The coordinator first introduced electronic balloting well into the project, when he saw that a large number of undecided issues and proposals had accumulated since the second face-to-face meeting and felt that some resolution was needed to move the process forward. He hoped to synchronize the group's deliberations, creating the temporal symmetry needed to resolve as many of the outstanding issues as possible, and identify those that required further discussion. To do so, he introduced an electronic form of voting, based on the voting procedure that had been used in the two face-to-face meetings. Six iterations of electronic balloting were used to pace activities during the final year of the project.

The balloting process incorporated an internal deadline, making it a closed and clock-based type of temporal structure not previously enacted by the Common LISP group. In the first ballot questionnaire, the coordinator set a specific date and time by which ballot responses had to be received, a chronological deadline which he used to push the group towards agreement on endlessly debatable issues. The group's acceptance of this deadline and those in subsequent ballot questionnaires was revealed in members' responses, which conformed to the deadline. This implicit acceptance resulted in the establishment of a new temporal structure around ballots, a structure which interacted with the project's existing draft-based structure. Balloting increased the rate of decision making and was an indicator of a general speeding up of the project tempo and an increase in deadline-based temporal structures enacted in the latter part of the project.

The shift in emphasis from open-ended to closed temporal structures was triggered by a second hiatus in the electronic conversation that occurred when the coordinator changed jobs and shifted his focus away from the project as he made the transition to a new organization. Unlike the first hiatus, which began and ended implicitly, this hiatus was explicitly identified as problematic by those Common LISP participants involved in their own organizations' LISP implementations—long and expensive product development efforts involving many players and local deadlines. Because the Department of Defense's demand meant that any new LISP implementation had to use the new Common LISP language, the various organizations' implementation schedules began to exert considerable temporal pressure on some participants to complete the Common LISP project. To end the hiatus, one influential group member took over many of the coordinator's project responsibilities, designating himself the discussion moderator, a role agreed to by the coordinator and accepted by the other members. As moderator, he accelerated the last stages of the project, pushing issues to decision via a series of mini-ballots. In this division of responsibilities and in the subsequent acceleration of activity, we see the group incorporating a closed, deadline-oriented ballot structure alongside its open-ended, draft-based structure. As the pace accelerated and members intensified their activity, the percentage of messages sent during the peak 7 to 11 pm period increased from 30 to 36%.

Near the end of the project, with LISP implementation deadlines looming for several members of the group, the original coordinator explicitly abandoned the group's open-ended temporal structure by imposing a final deadline. On June 9, 1983, he sent a message in which he nominated the minor U.S. holiday Flag Day (June 14) as

the final date by which changes to the Common LISP language would be accepted:

> We have to choose a cutoff date. and now seems to be a good time. I propose to give yet another meaning to "Flag Day." . . .After that point (23:59 on June 14, 1983) I propose to terminate "elective" changes to the Common LISP manual.

In this message he crafted a kairotic moment for completion. Although he acknowledged that his choice of June 14 was arbitrary, he designated it in precise 24-hour clock time and shaped it into a significant event in the project, replacing the open-ended, draft-based temporal structure with a closed temporal structure oriented around a chronologically specific end point for the project. His final deadline of 23:59 implicitly reflected the daily participation pattern, allowing the opportunity for a last daily flurry of messages before cutting them off. To signal the arrival of this deadline, the coordinator sent out a message at midnight on June 14, with a subject line that mimicked a clock striking twelve: "BONG BONG BONG BONG BONG BONG BONG BONG BONG BONG BONG BONG." In the message, he stated explicitly that "The window for technical changes to the first edition of the Common LISP manual has been *closed*."

The flow of traffic on the Common LISP list fell off quite significantly after that date. Nevertheless, as suggested in his reference to "the first edition of the Common LISP manual," the project as a whole did not end. Shortly after Flag Day, another Common LISP member explicitly pointed out that the group could start thinking about the next edition of the Common LISP manual:

> A bunch of things were put off without decisions or were patched over in the effort to get agreement on the first edition. . . . However. it is perhaps not too soon to begin thinking about what major additions/changes we want to get into the second edition, so that those who want to make proposals can begin preparing them and so that people can make their plans in light of what is likely to be coming.

The coordinator and other members thus reshaped what had, until that point, been framed as a linear process into a cyclic one in which the task of defining the Common LISP language continued.

Temporal Structuring in the Common LISP Project

This discussion has shown how members of the Common LISP group temporally structured their activities over the course of the project. Such structuring occurred both explicitly, through the organizational and rhetorical skills of the coordinator (e.g., when he introduced the ballot genre system and designated the Flag Day deadline) and implicitly (e.g.. when the members rested from the NIL incident). While some events, such as the AAAI annual

conference and the ballot deadlines, were reified into fixed chronological times, these were explicitly shaped to particular purposes (a face-to-face Common LISP meeting and a decision-making process). Thus, both explicit and implicit action, when ratified by other members of the community, may reinforce or modify temporal structures. The Common LISP illustration also shows how enactment of temporal structures constrains and enables ongoing human action. For example, Common LISP members, in returning their ballots at the specified deadline, were constrained in the amount of time they had to consider and cast their votes. However, these balloting deadlines also enabled a collective sense of the issues to emerge within a relatively short period of time.

The temporal structuring engaged in by Common LISP members bridges the subjective-objective temporal dichotomy discussed earlier. In Flag Day, for example, we observe the coordinator shaping his *subjective* sense of the opportune time (*kairos*) to end the project. giving it an *objective*, calendar-based time (*chronos*), then contributing to its reification. Similarly, the loosely structured, cross-organizational Common LISP group implicitly established an informal, event-based temporal structure around the coordinator's issuance of manual drafts, and only moved to more clock-based structuring towards the end of the project. under pressure from deadlines within the members' individual organizations. What we saw in their practices, however, was not simply a change from event-based to clock-based structuring, but an interplay of the two. For example, the electronic ballots were enacted as project events within which clock-based deadlines were embedded, while the Common LISP coordinator crafted Flag Day into a significant project event by precisely defining a clock-based deadline.

Interdependence is also evident in the shift in emphasis from the *open-ended* temporal structure enacted early in the project to the *closed*, deadline-bound structure by the end. While the closure achieved on Flag Day seems to point to *linear* rather than *cyclic* temporal structuring, the move to start discussing changes for the second edition of the manual is evidence of the group's enactment of a cyclical structure. The Common LISP group's activities also provide examples of how *universal* temporal structures were *particularized* in practice. Each e-mail message included the precise time of the message, automatically recorded and expressed in the most universalistic, quantified terms of a 24-hour clock: "Date: Monday, 26 July 1982, 14:07-EDT." Perhaps influenced by such designations, the Common LISP coordinator expressed deadlines in similarly universal terms, even though all the members of Common LISP were within the United States. At the same time, he took a U.S. national holiday

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indicated on his own calendar, Flag Day, and gave it a much more particularistic meaning, one specific to the Common LISP group itself. Finally, we see a blurring of the conventional distinctions between *natural* and *social* times. The social time represented by the standard notions of a 9 am to 5 pm working day was not a primary temporal structure enacted by these participants, who posted the majority of their messages at other times throughout the 24-hour day. Neither did they enact a purely biological rhythm, though this obviously influenced them since the lowest activity occurred when most members were sleeping. The intensification of peak 7 to 11 pm communication during the last few months of the project illustrates how social and biological times interacted to extend the temporal duration of daily work practices for project members.

The Common LISP example provides additional insights into temporal structuring around two notions: virtual temporal symmetry and the scope of temporal structures. In spite of their geographical dispersion and the multiple temporal structures they enacted, the Common LISP group achieved some limited temporal symmetry, even if they lacked full temporal symmetry of the sort found among such face-to-face communities as Zerubavel's (1981) Benedictine monks. For example, the Common LISP group met face to face twice, using a conventional mechanism for achieving temporal symmetry for a short time period. In the absence of such synchronous assembly, the group also developed several mechanisms for achieving a sort of *virtual temporal symmetry*. Because members did not receive drafts in real time, the issuance of manual drafts engendered virtual temporal symmetry which achieved incomplete but useful temporal alignment. Over time, as the project entered its final months, the coordinator introduced additional mechanisms to synchronize group members' activities—the ballot deadlines and the Flag Day deadline. Devices such as the midnight time stamp and 12 "BONGS" subject line of the coordinator's deadline announcement were intended to create the effect of temporal symmetry, of the group sharing a moment, even though individual members clearly read the message at different moments. Members' use of these mechanisms of virtual temporal symmetry, together with the two face-to-face meetings, created adequate temporal symmetry to support the project.

The Common LISP project also highlights how the difficulty of changing temporal structures is related to what we might call their *scope*—that is, how broadly they are recognized and enacted within communities. This notion of scope resembles that of "structural depth" proposed by Sewell (1992), who argues that structures differ in terms of how pervasive and taken-for-granted they are. The

AAAI meetings, which served a large, geographically dispersed organization of AI researchers, had well-established and institutionalized annual meeting times that Common LISP project members treated as given and unalterable temporal structures to be utilized as an opportunity for face-to-face contact. On the other hand, the temporal structures associated with Flag Day and the ballot deadlines were readily established, as members rapidly endorsed the proposals and actions of the coordinator. Similarly, the change from open-ended to closed temporal structuring that occurred late in the project was initiated in response to the less-flexible temporal schedules of external stakeholders.

Implications of a Practice Perspective on Time

The practice-based notion of temporal structuring previously illustrated focuses attention on how the ongoing actions of members of a community shape and are shaped by a variety of temporal structures such as meeting schedules, project deadlines, and academic calendars. Such temporal structuring occurs as people routinely schedule and attend departmental meetings, work towards project deadlines, and organize their lectures according to academic calendars. It is through such temporal structuring that time is made meaningful and consequential in organizational life.

The notion of temporal structuring, as understood through a practice perspective, offers an alternative view of the creation, use, and influence of time in organizational life. While a focus on either objective time or subjective times may offer important analytic advantages to researchers, both tend to neglect important aspects of temporal structuring in practice. While an objective view overlooks the role of human action in shaping people's experiences of time in organizations, a subjective view downplays how human action is shaped by objectified expectations of time in organizations. In contrast, a practice-based perspective seeks to show how the recurrent practices of social actors shape temporal structures that are experienced as "time" in everyday life, and how these practices in turn are shaped by previously established temporal structures that influence expectations of time in organizations. Such a perspective allows us to ask a variety of different questions. What types of temporal structures can be identified in the recurrent practices of members of a community, and by what criteria (e.g., scope, community, purpose)? How did these temporal structures emerge and become "stabilized-for-now?"

What were the interests, conditions, and actions that allowed these temporal structures to be adopted, objectified, and institutionalized? What are the interests, conditions, and actions that sustain the reproduction of those temporal structures over time? What alternative, complementary, or contradictory temporal structures are being enacted that influence or threaten the continued reliance on these temporal structures? How and under what conditions might these temporal structures be changed, and with what consequences for work, interaction, and organizing? All of these questions suggest avenues for future empirical research.

This section explores implications of a practice-based temporal perspective by first highlighting how it can guide future research in a variety of paradigms, and then how it may be used to reexamine a number of contemporary ideas about time.

Implications for Research on Time in Organizations

In proposing the notion of temporal structuring, we are not arguing for or against any particular paradigm or methodology. On the contrary, we believe multiple paradigms and methodologies offer distinct and important analytic advantages for understanding the role and influence of time in organizations. What we are suggesting is increased attention to and explicit consideration of the temporal structuring that organizational actors engage in as they go about their everyday activities. Indeed, our practice-based perspective of temporal structuring suggests some implications that may guide further research in a variety of methodological approaches.

The notion of temporal structuring focuses attention on what people actually do temporally in their practices, and how in such ongoing and situated activity they shape and are shaped by particular temporal structures. By examining *when* people do what they do in their practices, we can identify what temporal structures shape and are shaped (often concurrently) by members of a community; how these interact; whether they are interrelated, overlapping, and nested, or separate and distinct; and the extent to which they are compatible, complementary, or contradictory. That is, by focusing explicitly on temporal structuring, researchers can examine the conditions under which actors such as those in Gersick's rich empirical studies (1988, 1989, 1994) choose to enact clock-based or event-based structures. Recognizing that clock time and event time often overlap and interact suggests that researchers should pay attention to the possibility that a given structure has aspects of both. Similarly, with relation to entrainment (Ancona and Chong 1996, Clark 1990, McGrath 1990), the notion of temporal structuring suggests that researchers who seek the mechanisms of

social entrainment should also look towards the recurrent actions of individuals establishing or reinforcing the temporal structures that are being "captured" (or, for that matter, the reified structures that are "capturing" them). By examining a community's repertoire of temporal structures, we can understand the variety of ways in which community members' actions (re)produce the different temporal structures they constitute through their ongoing practices

Based on our understanding that change in temporal structures occurs through changes in everyday practices, we can suggest conditions likely to facilitate or impede such change. For example, temporal structures with broader scope should be more persistent and more difficult to change than those with narrower scope. Going beyond our Common LISP example, we can propose a number of dimensions to the notion of scope: *size* (i.e., number of participants in community); *penetration* (i.e., percentage of a community that uses the temporal structure); *dispersion* (i.e., geographical spread of community members using the temporal structure); *embeddedness* (i.e., degree to which the temporal structure is implicated in community members' daily lives), and *extent* (i.e., number of communities enacting the structure). The larger the size of the community enacting a particular temporal structure, the more difficult it should be to change (e.g., while the Common LISP group changed its own temporal structures, it did not attempt to change the annual meeting structure of the much larger AAAI). Similarly, the higher the percentage of people in a given community who enact a specific structure (i.e., higher penetration), the more difficult it should be to change. Within a firm, for example, we might expect that a structure enacted by most or all organizational members (e.g., the holiday schedule) would typically be more difficult to change than one enacted only by a specific research team (a particular project schedule). Greater geographical dispersion should also make change more difficult, though modern communication technology has reduced that difficulty (e.g., the annual shift to and from daylight savings time made by millions of Americans, which is made easier by mass media publicizing of the shift). Still, even today we find geographical islands of resistance to such a change, however widely institutionalized (e.g., Arizona's refusal to adopt daylight savings time). In addition, a temporal structure which is deeply embedded in everyday practice and thus taken for granted (e.g., coordinating activity by the clock or punctuating the day with three meals) should be more enduring and harder to change than one that is more consciously and deliberately practiced (e.g., going to a particular meeting every Friday at noon). Finally, a temporal structure that extends across

multiple communities (e.g., the five-day work week in industrialized economies) should be less amenable to modification than one contained within a single community.

Differences in the ease of changing temporal structures depending on their scope can be investigated from a number of different research paradigms. For example, temporal structures that are institutionalized and have a broad scope will be routinely treated as fixed, external, and objectified. These stabilized-for-now temporal structures can usefully be regarded as independent variables in certain types of research studies. Other approaches may wish to examine the actions taken by members to alter the temporal structures routinely enacted within their community, and how differences in power relations enable and constrain such efforts.

Our empirical example also highlighted the value of achieving virtual temporal symmetry for members of a geographically dispersed community. As electronic media become increasingly central to organizational life, individuals may use asynchronous media in various ways to shape devices of virtual symmetry that help them coordinate across geographical distance and across multiple temporal structures. This suggests that when studying the use of electronic media, researchers should pay attention to the conditions in which virtual temporal symmetry may be enacted to coordinate distributed activities, and with what consequences. Interesting questions for empirical research include the following. As work groups in organizations become more geographically dispersed and/or more dependent on electronic media, do members enact virtual temporal symmetry for certain purposes? If so, for which types of purposes? And how? If not, how do such work groups achieve temporal coordination?

Finally, our perspective emphasizes that the point of view and moment of observation from which researchers and practitioners view temporal structures affect what they see. We have noted that point of view is critical in determining whether a given temporal structure is seen as linear or cyclic. From the production floor, the "window of opportunity" (Tyre and Orlikowski 1994) associated with new production technology may appear to be a one-time event, while from the executive offices, this change may be seen as cyclic. Point of view, as shaped by moment of observation, may also affect whether participants in a long-term project are understood to be involved in an open-ended or closed engagement. When researchers choose a type (e.g., cross-sectional vs. over time) or period of study they are choosing what temporal structures they may see and understand. Considering point of view and moment of observation, while easy to ignore in pursuing specific research studies, may create increased awareness among researchers (whatever the topic of study) that their conceptual choices have implications for their empirical findings.

Implications for Contemporary Ideas About Time in Organizations

The notion of temporal structuring elaborated here allows us to reexamine some contemporary ideas concerning the nature and influence of time in organizations—in particular, ideas about "work/family balance," "time management," "clockspeed," and "real time."

The idea of "work/family balance," for example, suggests that it is both possible and desirable to achieve an equilibrium between time spent in paid employment activities and time spent in activities involving the family or home. While attempting to address a serious concern of working women and men, the characterization of "work/family balance" nevertheless creates a dichotomy between work and family, implying that the two are mutually exclusive and all-encompassing spheres of everyday activity, each with its own distinctive temporal rhythms. The notion of temporal structuring we have developed here suggests instead that people enact multiple, heterogeneous, and shifting temporal structures in all aspects of their lives. For example, in one day an individual may draw on such temporal structures as season (e.g., dressing appropriately), commuting schedule (e.g., avoiding rush hour tie-ups), school timetable (e.g., dropping children off at school in the morning), work day schedule (e.g., arriving at work by a particular time), project schedule (e.g., analyzing data for a pending report), networking event (e.g., going to lunch with a former colleague), health maintenance calendar (e.g., having an annual mammogram), professional development schedule (e.g., preparing for an upcoming professional conference), fitness routine (e.g., going to the gym), family schedule (e.g., cooking and eating dinner with the family), "down time" (e.g., watching television or reading a book), and biological time (e.g., sleeping).

Recognizing this multiplicity and interdependence of temporal structures in everyday life suggests that attempting to achieve a balance between the temporal rhythms of work and those of family omits many other temporal rhythms in daily life. Instead, it may be more useful to examine the different temporal structures enacted by people as they participate in the varied temporal conditions of their organizations, occupations, families, religious communities, and neighborhoods; and to consider where, how, to what extent, and with what consequences for people's lives such temporal structures dominate, intersect, and conflict. This perspective further suggests that shifting temporal rhythms requires more than just rhetoric

about "work/family balance." It requires people enacting a different set of temporal structures, which in turn implies profound changes in the assumptions, expectations, norms, incentives, and practices of the organization and the family, as well as of the other communities. For example, families, neighbors, and employers all need to adjust norms, incentives, and practices to accommodate individuals telecommuting and working from home. While a number of scholars have noted that such fundamental social and cultural changes are particularly difficult to achieve (Bailyn 1993, Perlow 1997), a focus on temporal structuring can help to identify those practices and conditions that may be especially relevant to the enactment of modified temporal structures.

The concept of temporal structuring also sheds a different light on the idea of "time management," which suggests that individuals are capable of so ordering their temporal schedules and rhythms that they can "take charge" of their busy lives. While useful in specific areas, such an idea overlooks the fact that temporal structuring is a social process, so that a single individual necessarily requires the cooperation of other members of his/her community to maintain or modify temporal rhythms or schedules. This social dimension raises a number of questions for empirical research. How might groups or communities cooperate to align or synchronize their activities so as to help individuals enact more effective temporal structures? What changes in communication norms, work practices, or technologies will facilitate "collective time coordination?" Perlow's (1997) "quiet time" experiment with members of a product development group is one example of a change intended to facilitate such collective time coordination. Another is suggested by our empirical example, which highlights the role of virtual temporal symmetry.

The notion of temporal structuring helps put the current focus on "clockspeed" in a broader perspective. The idea of "clockspeed" refers to the importance of reducing the clock time spent in particular organizational activities such as production or distribution, and the value that can be generated from such reductions (Fine 1998). While a focus on chronological time and closed temporal orientation in organizational activities is not problematic per se, the presumption that such time alone is singularly important *is* problematic. The notion of temporal structuring suggests that people enact a multiplicity and plurality of temporal structures, not all of which can be characterized in terms of the clock or deadlines. By privileging clock time, managers may be encouraging workers to narrow the range of temporal structures they enact in their everyday practice, with some unintended and possibly negative

consequences. In terms of March's (1991) distinction between exploitation and exploration, such a narrow range of temporal structuring may promote an almost exclusive focus on exploitation, thus ignoring or undermining the opportunities for exploration, learning, innovation, and improvisation which are more likely to accompany a broader range of temporal structuring.

The idea of "real time"—or "zero time" in the most recent parlance (Yeh et al. 2000)—is closely associated with that of speed, and suggests that in today's increasingly Internet-dominated world, activities must happen instantly because, in the contemporary rhetoric, "geography, borders, and time zones have become obliterated" (Cairncross 1997). The notion of temporal structuring views "real time" not as an inherent property of Internet-based activities, or an inevitable consequence of technology use, but as an enacted temporal structure, reflecting the decisions people have made about how they wish to structure their activities, both on or off the Internet. As an alternative to the idea of "real time," Bennett and Weill (1997) have suggested the notion of "real-enough time," proposing that people design their process and technology infrastructures to accommodate variable timing demands, which are contingent on task and context. We believe such "real-enough" temporal structures are important areas of further empirical investigation, allowing us to move beyond the fixation on a singular, objective "real time" to recognize the opportunities people have to (re)shape the range of temporal structures that shape their lives.

Conclusion

In this paper we have proposed grounding the study of time in the recurrent social practices of organizational actors. Such a focus shifts attention to the temporal structuring that actors engage in as part of their everyday practices, allowing an examination of the temporal structures constituted through such daily actions. Furthermore, such an examination facilitates an exploration of the conditions under which people reinforce, adjust, or change their temporal structures, as well as introduce new ones. By integrating a practice-based perspective with the notion of temporal structures, we emphasize the human role in shaping as well as being shaped by time. Temporal reflexivity—being aware of the human potential for reinforcing and altering temporal structures—is essential if we wish to act with effect in our world. Bazerman (1994, p. 100) has stated that "Only by uncovering the pathways that guide our lives in certain directions can we begin to identify the possibilities for new turns and the consequences of taking those turns." In this paper, we have

proposed a perspective on time that can help both researchers and practitioners identify the possibilities of shaping new pathways in the organizational world.

Acknowledgments

Endnotes

[1]Our notion of temporal structuring draws on Giddens' (1984) discussion of structuring and not his treatment of temporality, which has been criticized for paying insufficient attention to intersubjective action (Bergmann 1992, Nowotny 1992).

[2]In the last decade, both Miller (1992) and Bazerman (1994) have attempted to integrate the opposing interpretations of *kairos*, recognizing the dynamic interplay between the given temporal characteristics of a situation and the actions of humans in turning those characteristics into rhetorical opportunities.

[3]A few scholars have attempted to reconcile the objective-subjective dichotomy in the social sciences (see, for example, Adam 1995, Clark 1990).

[4]Schryer (1993) developed the notion of "stabilized-for-now" in reference to genres, which we have argued elsewhere are a type of social structure (Yates and Orlikowski 1992).

[5]As recalled by Dorothy Height, chair of the National Council of Negro Women, in an interview on National Public Radio's *Morning Edition*, February 27, 1998.

[6]See Orlikowski and Yates (1994) for more details of the research study which generated this example.

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